TCT-443

Cost and Utilization Among Patients After Incident Percutaneous Coronary Intervention

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BACKGROUND Few studies have quantified resource utilization or costs after percutaneous coronary intervention (PCI) on a population level. Understanding variation in resource use is necessary to improve the quality of care for this population.

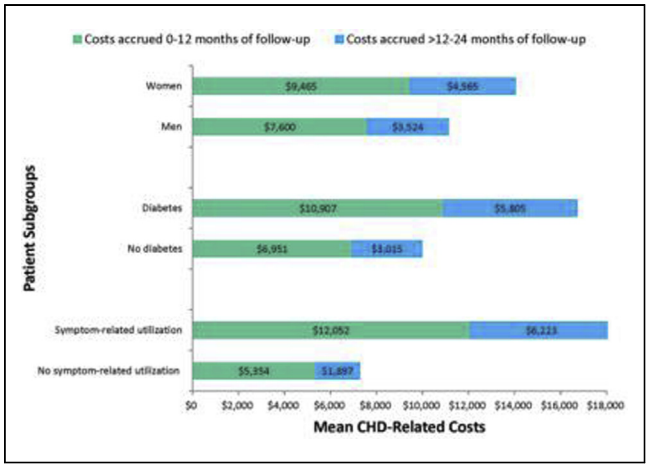
METHODS We conducted a retrospective cohort study of patients >20 years old receiving an incident PCI between Jan 2008 to Dec 2012 in Kaiser Permanente Northern California, a large, integrated health care system caring for >3.7M persons. We calculated crude rates of repeat revascularization (PCI and CABG), resource utilization (overall and coronary heart disease (CHD)-related hospitalization, emergency room (ER) visits, and outpatient visits), and CHD-related health care costs through Dec 2013. Results were stratified by (1) gender, (2) diabetes status and (3) patients with recurrent CHD-related symptoms, which included those with repeat stress testing or anti-anginal medication use after PCI.

RESULTS Of 16,665 patients identified with incident PCI (mean age 66 years), 29% were women, 30% had diabetes mellitus, and 59% received PCI in the setting of an acute coronary syndrome. In the first 12 months after incident PCI, 8% had repeat PCI, 25% had a stress test, 20% had a CHD-related hospitalization, and 33% had a CHD-related ER visit. During mean follow up of 3.0 years, rates (per 100 person-years) of repeat PCI were substantially higher for patients with diabetes and for those with CHD-related symptoms, but were similar for men and women (see Table). Rates of stress testing after PCI were substantially higher for those with CHD-related symptoms, but not meaningfully different for diabetic and female subgroups. CHD-related hospitalizations, CHD-related ER and CHD-related costs were substantially higher for all three subgroups (see Table and Figure).

Table. Crude rates of post-PCI resource utilization by subgroups

	Patients at risk	Repeat PCI		Stress Testing		CHD-related hospitalization		CHD-related ER visits	
		Events/ 100 person-years	95 % CI	Events/ 100 person-years	95 % CI	Events/ 100 person-years	95 % CI	Events/ 100 person-years	95 % CI
Overall	16665	5.6	(5.4-5.9)	21.0	(20.6-21.3)	17.5	(17.2-17.9)	50.3	(49.7-50.9)
Women	4821	5.4	(5.0-5.8)	20.4	(19.7-21.2)	21.7	(20.9-22.4)*	65.1	(63.8-66.4)*
Men	11844	5.7	(5.5-6.0)	21.2	(20.7-21.6)	15.9	(15.5-16.4)*	44.4	(43.7-45.1)*
Diabetes	5007	8.2	(7.7-8.6)*	20.1	(19.4-20.9)*	28.3	(27.4-29.2)*	64.6	(63.3-66.0)*
No diabetes	11658	4.6	(4.4-4.9)*	21.3	(20.8-21.7)*	13.3	(13.0-13.7)*	44.7	(44.0-45.4)*
CHD-related symptoms	6390	8.3	(7.9-8.7)*	39.2	(38.5-40.0)*	24.2	(23.6-24.9)*	68.6	(67.6-69.7)*
No CHD-related symptoms	9735	3.2	(3.0-3.4)*	4.2	(4.0-4.5)*	11.4	(11.0-11.9)*	33.5	(32.8-34.2)*

*$p < 0.05$



CONCLUSIONS Among patients with incident PCI, resource utilization and costs were generally higher among female patients and those with diabetes, and substantially higher among those with recurrent CHD-related symptoms. Research to identify mechanisms driving excess resource utilization is warranted.

CATEGORIES CORONARY: PCI Outcomes

KEYWORDS Economic outcomes, PCI - Percutaneous Coronary Intervention, Utilisation

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A Novel Modified Provisional Bifurcation Stenting Technique: Jailed Semi-inflated Balloon Technique

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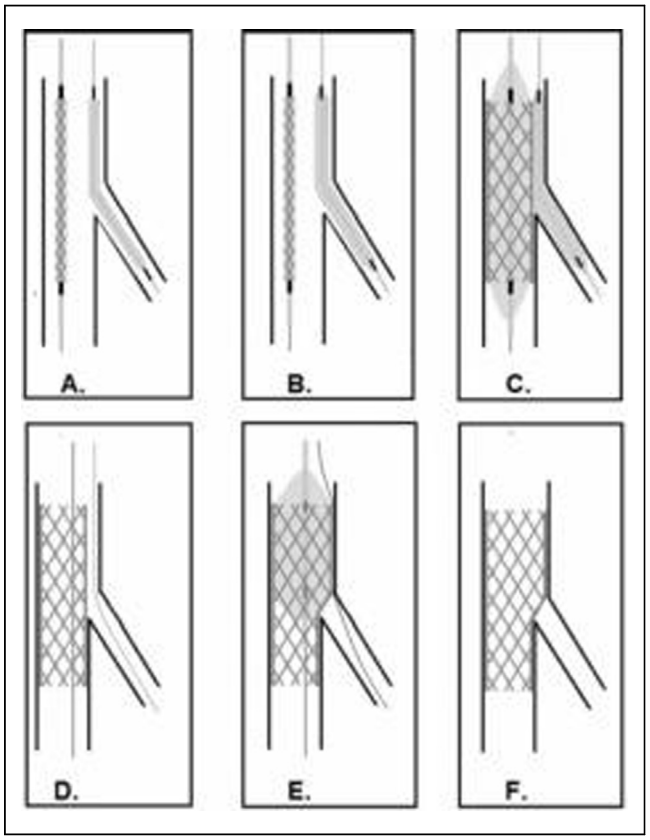
BACKGROUND Currently, provisional approach is recommended to treat most of coronary bifurcation lesions. However, it is associated with the risk of side branch (SB) occlusion after main vessel (MV) stenting due to plaque or carina shift into the SB. The SB occlusion may cause peri-procedural myonecrosis or hemodynamic compromise. Therefore, strategies are needed to reduce the SB occlusion during provisional approach. We proposed a new technique for the treatment of coronary bifurcation lesions, called jailed semi-inflated balloon technique (JSBT).

METHODS We selected 137 patients with 148 distinct coronary bifurcation lesions underwent PCI using JSBT. All patients were followed with hospital visits or telephone contact up to 1 month. Procedure:- Steps of this technique were illustrated in Figure 1. 1. The procedure starts with wiring of both branches. 2. A standard coronary stent is advanced to cover the MV lesion and then a standard semi-compliant balloon is advanced into the SB. The proximal markers of the SB balloon and MV stent balloon are aligned (Figure 1A); 3. The SB balloon is inflated to low pressure (3 atmospheres) (Figure 1B); 4. Then, the MV stent balloon is inflated with nominal pressures. During inflation of MV stent balloon, proximal part of jailed SB balloon is compressed and contrast is squeezed, overinflating the distal part of the balloon at the SB ostium. Thus the jailed semi-inflated balloon is prevent plaque or carina shift into the SB ostium due to its full occupation of the SB ostium. 5. Both MV stent balloon and SB balloon are deflated together and removed (Figure 1D); 6. For optimization of MV stent apposition, POT is performed with a short non-compliant balloon (Figure 1E); 7. Final angiogram (Figure 1F).

RESULTS The majority of the patients had acute coronary syndrome (64.2%) and Medina 1.1.1. bifurcation lesions (62.8%). After the MV stenting, TIMI 3 flow was established in 100% of both MV and SB. There was no SB occlusion in any patient. There was no major adverse cardiac event during in-hospital stay and one month follow-up.

CONCLUSIONS This new JSBT technique provides high rate of procedural success, excellent SB protection during MV stenting and early clinical outcome. However, additional multicenter randomized studies with larger sample sizes and longer follow-up are necessary to establish the long-term safety and efficacy of this technique.



CATEGORIES CORONARY: PCI Outcomes

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The prognostic significance of repeat revascularization after percutaneous coronary intervention: an analysis of 41,180 patients from the British Columbia Cardiac Registry

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BACKGROUND Repeat revascularization following percutaneous coronary intervention (PCI) is a common end-point in clinical studies which may reflect restenosis, myocardial infarction or stent thrombosis events. However, the association between repeat revascularization and long-term mortality is poorly defined. We explored the relationship between target vessel revascularization (TVR) and long-term mortality following PCI.

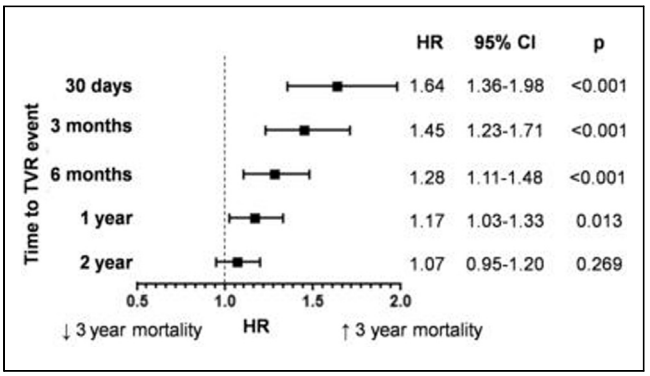
METHODS We analyzed mortality in 41,180 patients following their first index PCI procedure between 2008-2014 who were enrolled in the British Columbia Cardiac Registry. Cox proportional hazard models were built to determine the association between TVR (30 days, 1 month, 6 months, 1 year and 2 years) and long-term mortality at 3 years.

RESULTS A total of 5,554 patients (13.4%) received TVR during the study period. The TVR rates for 30 days, 3 months, 6 months, 1 year and 2 years were 2.4%, 3.4%, 4.9%, 6.6% and 8.5% respectively. The 3-year mortality rates according to whether they had TVR versus no TVR are shown in table 1. Multivariable-adjusted analyses identified TVR at 30 days as a strong predictor for 3-year mortality (HR=1.64, 95% CI: 1.36-1.98, p<0.001). This association persisted for TVR at 1 year (HR=1.17, 95% CI: 1.03-1.33, p=0.013), but was lost for TVR at 2 years (HR=1.07, 95% CI: 0.95-1.20, p=0.269). The trends in HRs are shown in figure 1.

CONCLUSIONS In this large cohort of unselected patients undergoing PCI, early TVR was a strong independent predictor of long-term mortality. This association became less strong with progressively later TVR events. These data suggest that TVR events are not benign, and might help explain late mortality events in clinical studies.

Table 1

Follow-up period	Cumulative TVR rate (%)	3 year mortality (%)		
		TVR group	No TVR group	p value
30 days	2.4	13.3	7.7	<0.001
3 months	3.4	11.9	7.7	<0.001
6 months	4.9	11.1	7.6	<0.001
1 year	6.6	10.3	7.6	<0.001
2 years	8.5	9.3	7.7	0.748



CATEGORIES CORONARY: PCI Outcomes

KEYWORDS Mortality, long-term, Percutaneous coronary intervention, Target vessel revascularization

TCT-446

Outcomes Among Patients Enrolled Versus Not Enrolled In Interventional Cardiovascular Clinical Trials: Insights From A Single-center Analysis

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BACKGROUND The real world generalizability of clinical trials has come under increasingly intense scrutiny. While patients participating in clinical trials are of a lower risk profile, they are followed up more closely post percutaneous coronary intervention (PCI). We wanted to discern whether enrollment in interventional cardiovascular clinical trials translates to better or worse outcomes following PCI.

METHODS A single-center analysis was done of patients undergoing PCI between 1/1/2010 and 12/31/2013 (n = 14,075). Out of this cohort, 4.7% (n = 659) were enrolled in a clinical trial. We compared those enrolled versus not in clinical trials and analyzed for baseline and procedural characteristics, death, myocardial infarction (MI), target vessel revascularization (TVR), and major adverse cardiovascular events (MACE).

RESULTS Patients enrolled in clinical trials were younger, had a better left ventricular ejection fraction (LVEF), lower creatinine, and a